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*Serving the International Atari Community*

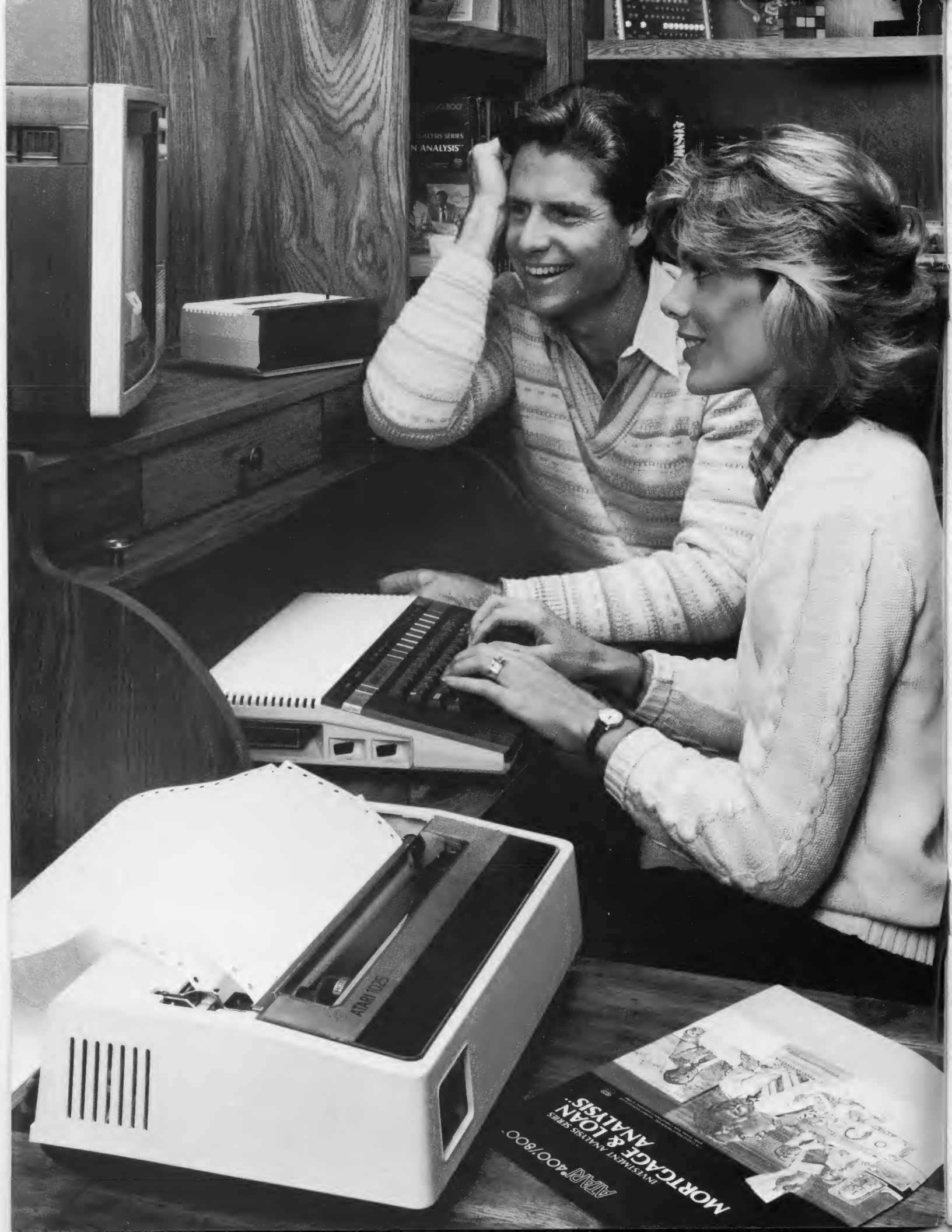


## ATARI MARKETING PRESENTS



ATARI 1200XL HOME COMPUTER™





## ATARI AT WINTER CES

by Arlan Levitan

The Winter Consumer Electronics Show, or CES, as it is referred to in the trade, was held in Las Vegas, Nevada from January 5th through the 9th. Your MACE reporter and Nebulous Software's Sheldon Leemon checked into our hotel/casino Friday afternoon, and although common sense told us that the best use of our time would be to play the tables, we decided to go over to the Consumer Electronics Show anyway. The show is truly massive this year. Even though the Vegas show is supposed to be the little sister of the summer Chicago show, this one felt bigger than the windy city's last CES. Special thanks to Steve Philpott of the Las Vegas user group who displayed some real Nevada hospitality in showing us around and keeping us from walking into walls.

### THE BIG NEWS? (yawn)

Well, the 1200XL turns out to be pretty much what I expected. A very fashionable styling job (I had to check underneath for a designer label) in elegant white, black and silver, houses what some loonies on the coast think will be the hottest item since electric shoelaces.

The 1200XL comes equipped with 64K RAM standard. Since the operating system actually loads from ROM into RAM there seems to be no real increase in usable RAM from BASIC or any other language that uses the 1200XL's modified Operating System.

No basic cartridge is included at the announced list price of \$899. The unit is completely sealed, (so much for Ramdisks and Bit3 80 column boards...) with the 1200XL's single cartridge slot and two joystick ports on the left side of the low profile console. Software that references joystick ports 3 or four will map on the 1200XL to ports 1 and 2, respectively. Atari has commendably taken pains to insure upward compatibility. 400/800 software that conforms to the spec laid out in the 400/800 technical users notes should have no problem running on the new system.

The molex I/O plug used to connect to peripheral devices is located in the back.

The keyboard does have a very different feel. The layout is now standard QWERTY (the inverse video key has been moved to the glitzy row of function keys on the top row. While there were so many members of the marketing team there you had to watch where your stepped, I did manage to corner someone with some technical knowledge of the machine.

The START, SELECT, OPTION, BREAK, and SYSTEM RESET keys are located in a row above the main keyboard (see cover photo). There are four function keys labeled F1 through F4. Each one has three possible functions. The primary function of the keys is cursor movement. This provides a more palatable form of cursor control for those of us who can't stand having to hold down the CTRL key on the 800 to do so. The regular cursor control method works also. Used as they sit, each of the four function keys (located above the top of the regular keyboard) will move the cursor in one direction (left, right, up, or down depending on which one you press).

If you hold the SHIFT key down, they become cursor home keys for the respective corners of the screen display. Each key has a different third function which is accessed by holding down the CTRL key. CTRL/F1 toggles the keyboard lockout on and off. CTRL/F2 toggles DMA (screen display) on and off. CTRL/F3 toggles the keyboard click on & off. CTRL/F4 toggles between the Atari character set that we all know and love, and an international set.

The function keys and the rest of the top row are all flat chrome touchsensitive squares. Another key on that row is the HELP key which can be used to access the internal diagnostics. I saw the memory, OS and keyboard diagnostics run. No errors occurred in the units on display. I wonder what the error messages say. Something like "RAM FAILURE at location 52E0 - TAKE ME TO A SERVICE CENTER - BRING YOUR CHECKBOOK"?

The familiar key click of the keyboard may be turned on and off, but unlike the 800, the click comes from the TV sound. There is no internal speaker in the 1200 itself. I did verify that the DIN plug is still there (in the back) so you can drive composite color monitors and B&W sets (sorry folks, it's still only a 40 column display). The rumors that there is another CPU

hiding in the box were flatly denied.

What are the BIG improvements? Well according to marketing, the GTIA is a reworked job with more saturated and pure color (whiter whites and bluer blues...detergent anyone?). The pokey has been overhauled and the sound is cleaner. The CPU, although still a 6502, is a custom VLSI job that cuts down the number of discreet components and chips, which should, they say, mean higher reliability (anybody out there taking bets?). It really is a very nice package, which if it had been priced at \$599 would be very attractive. And I'm still a bit miffed about no access to the internal Bus.

I know what I think of the 1200XL. Interested in what one high placed Atari executive had to say? "We at Atari believe that the model 1200XL is a new generation in home computing, a culmination of our experience in hardware design. With it's user aids and beautiful packaging, the model 1200XL is one of the 'friendliest' computers ever built -- and at an affordable price. It will be a handsome and usefull addition to any home.

Somebody gag that man with a spoon, please!

#### 800 Price Cut

The 800 list price was dropped to \$679 for a 48K unit, which only surprised those who thought it would go lower. The Basic cartridge and manuals are no longer included and must be purchased separately. Somewhat disturbing was a rumor that newly manufactured 800s will have all 48K on a single board and have no connectors in the last two RAM slots and right hand cartridge slot to keep costs down. This is one rumor that is hopefully without substance. Hang on to your old 800. It could get actually be worth more in the future than now if the rumored change is indeed fact. Some RF shielding has definitely been dropped.

Conspicuous in its absence at the Atari computer booth a CES was the long rumored Atari 600 computer. The 600 was supposed to be a 400 with a real keyboard. Atari personnel at the show stated that such a machine does not fit into the company's present marketing plans (does anything that makes sense?). Despite the predictions of pundits, no Atari 1050 disk drive was shown to anyone in public or private. Newly manufactured 810s sport

Tandon drive mechanisms instead of the squirrely MPIs used in the past. The new drives can be identified by a latch that swings instead of pops up.

Atari also unveiled the new Model 1010 cassette unit at the Las Vegas Consumer Electronics Show this weekend. The unit is nicely styled in the same manner as the new 1200XL computer. I queried an Atari representative as to the major differences between the new 1010 and old 410 recorders. The reply was encouraging indeed. "This one WORKS."

List price of the 1010 will be \$99.95. The other enhancement of merit is no built-in data cord. The new unit has a pair of Molex jacks in the rear, just like the 810 disk drive. This means that the 1010 does NOT have to terminate the serial daisy-chain - cause to rejoice for Alien Group Voice Box users. Another rep proudly pointed out that the 1010 also has an on/off switch and an LED pilot light. Another quantum leap in Atari computing. The 410 Recorder will be allowed to quietly disappear after introduction of the 1010.

Atari also showed the new 1020 forty column color printer to mildly interested bystanders. It features four colors-at-once printing (with sixteen to choose from) for doing pleasantly amusing graphics, but at 10 characters per second in print mode, I seriously doubt that it will ever replace pen or crayola for many users. Only \$299.95 for this smartly styled gimcrack. It does not require the 850 interface.

Atari 820 and 822 printers will be dropped from the catalogue. I can undrstand dumping the 820, but the 822 deserved a better fate than this.

As if things weren't depressing enough, Atari rolled out their new model 1025 printer. As rumored, the 1025 is a repackaged Microline 80 printer that runs at a blistering 40 characters per second. It features condensed, standard, and expanded (wide) print fonts. There is no proportional character set. The choice of the ML80 was made in adherence with Atari's committent to relieving troubled printer manufacturer's of discontinued and overstocked items. Shades of the 825 (aka Centronics 737)! Rumor has it that the person who selected the new printer was fired shortly



thereafter (Source: The Atari Rep who kept screaming, DONT QUOTE ME! DON'T QUOTE ME! after noticing he'd been overheard.)

The 825 and the Atari Word Processor will go the way of the Buffalo after people start snatching up the new 1025 at a list price of \$549.95. What's good about it? You don't need the 850 interface to use it. It also sports the new Atari "designer look" .

Atari unveiled their new ATARI WRITER word processing package at the show. It is one of the finest software products for the 400/800/1200 machines I have seen. The \$79.95 16K cartridge appears to be extremely well written and thought out. Features include: Global Search and Replace Ability to format to the screen, while the normal display does not scroll, if you opt to format your text to the screen horizontal scrolling is enabled. The formatted material may be up to 132 characters wide. Font Selection User Definable Tabs Standard Atari DOS files Works with Cassette Right Justification Auto Paragraph Indent File Chaining Double Columns Auto Page Numbering Headers & Footers Centering Form Letter Features (No, its not a true file merge...it will halt at preselected points in your text while printing and allow you to enter data that is particular to the document being printed). I must admit that I was truly impressed with this package. Atari refused to deny that the cartridge was done by the author of Text Wizard. It certainly had the ergonomic "feel" of the popular WP package, and DATASOFT was biting their lip when asked if TEXT WIZARD 2.0 would ever see the light of day. I feel the 2.0 version will never be released. No matter, ATARI WRITER will surely be one of my favorites. Now the bad news...It supports only the Atari 820, 822, 825 and 1025 out of the box. Some members of the Marketing staff just refuse to "officially" acknowledge the existence of the real world and they kiboshed plans for support of the NEC, EPSON, PROWRITER and other popular printers being included. Fear not! Some level heads did prevail, and support for those printers will come in the form of a disk of printer drivers for those devices that will be distributed through APX (the Atari Program Exchange). It will cost 20 or 30 dollars which is a tad ridiculous, but at least the support will be available. ATARI WRITER is my choice for ATARI CES honors based upon what I have seen

so far.

A slew of new Atari Inc. software was shown at CES.

On the educational scene for the very young, Juggles' House, a program that teaches the concepts of upper/lower and inside/outside and Juggles' Rainbow handles above/below and left/right. \$29.95 each on disk or tape. Sesame Street seems as effective, a lot cheaper, and more entertaining to this kid.

For the 7 to 10 year old crowd, Atari displayed Mickey in the Great Outdoors. Featuring well done graphics, the Ubiquitous Mouse of Disney fame teaches language arts and basic arithmetic. I liked this one a lot but the \$50 price tag may give some pause. Available on disk and cassette.

Four new entries in Atari's personal development line popped up at the show. Atari Speed Reading comes on five cassettes at \$79.95 the set. Evelyn Wood must be quaking in her boots. Some smidgens from an Atari Music tutorial program were shown. No price was announced.

Home management buffs can look forward to Timewise (\$30), a time management program on diskette that will help computer fanatics schedule the three minutes a day they spend speaking to their spouse.

The technically well executed but tragically flawed Telelink II cartridge was demonstrated. For all its bells and whistles, Telelink II continues in the incredibly oblivious-to-user-needs Telelink tradition of not being able to dump data to disk or tape. This one will make an excellent doorstop or hockey puck for serious telecommunications buffs.

Ah...

What would life be without new Atari game software?

Although it had some cute graphics, the E.T. Phone Home game seemed a crashing bore to me. I thought that after divestiture of AT&T, direct dial was supposed to get cheaper. \$50.

As if one movie tie-in wasn't enough, you can also look forward to Superman III (\$50). At

that price, Valerie Perrine isn't even included.

I'm not sure if Star Trux (sic) is any better than the previous two. I'm sure the title resulted from Paramount pictures refusing to sell Warner Communication the rights to use the Star Trek name. Might serve the Legal department right if THEY got slapped with a subpoena for a change. If I paid \$45 for the cartridge I'd probably want to sue also.

Just so I don't get accused of being a negative thinker, there is a rose among the stinkers. QIX is a VERY nice translation of the arcade game. The graphics are nice, the play values are right, it has the feel of a winner. \$45, but worth it in this case

Although there was an incredible diversity of wonders to feast upon at CES my personal favorite had to be the absolutely incredible Melon Margaritas at Ricardos Mexican Restaurant. I can't thank Steve enough for taking Sheldon and myself there for a couple of hours to get away from the convention madhouse. By the way, the Vegas show did officially break all previous attendance records for ANY kind of trade show; over 80,000 people were there on Saturday!

Well, that wraps up my coverage of the Atari Inc. side of the show. Remember, you saw it in MACE first!

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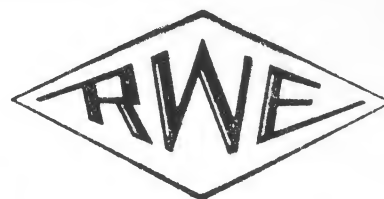


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## CES REPORT

### The World Beyond Atari

by Sheldon Leemon

In a show the size of the Winter CES, it stands to reason that there would be a few other exhibitors besides Atari whose wares would be of interest to MACE members. Here, then, is a brief rundown on other products shown at CES:

#### 400/800 Compatible Software:

One development that I expected was the entry of major Atari VCS game producers into the home computer market. Though we have seen nothing yet from biggies like Activision and Imagic, a couple of lesser lights had some computer titles. Apollo was showing space Caverns, which looked to be a converted VCS game, and one other. Spectravision, of Communist Mutants From Outer Space VCS game fame, had a catalog full of computer software, not only for Atari, but Texas Instruments and VIC-20 as well. An interesting example was a 3-D game requiring the use of those red and green glasses (now that's scary!). As a matter of fact, Spectravision not only had computer software, but their own home computer to boot (see computer section below).

Of course, there was plenty of software on display from more familiar sources as well. One of the most exciting was a demo screen of Datasoft's Zaxxon, looking even better than the Coleco-Vision version. Even more astounding was the almost-completed TRS-80 Color version which also looked better than Coleco's! Datasoft also had their Atari BASIC compiler seemingly ready for sale.

Our old friends at Synapse were there, with one of the most attractive displays at the show. New games included the long-awaited Fort Apocalypse, a preliminary version of Necromancer by MACE's own Bill Williams, and other classics such as Drelbs. Those shown represent just the tip of the iceberg, and you can bet that Synapse has dozens of exciting games just around the corner.

Many other software manufacturers were

represented at the show, such as Thorn-EMI, Sirius Software, First Star Software, and CBS Software. Most of what was shown had already been released, and is probably familiar to most of you. CBS did have a preview of an exciting new game called Mountain King, done by the designers of the K-Byte hit, K-razy Shootout. Though I have not gotten a chance to check playability, the graphic presentation is outstanding.

#### Home Video Game Software:

The big news seemed to be the proliferation of manufacturers and the large number of licensed titles, such as Twentieth Century Fox's M\*A\*S\*H video game for the VCS. There are now games based on movies, comic books, rock groups, and who knows what else. New companies are still entering the fray, such as coin-op heavyweight Sega, and those who were new entries at the Summer CES, like Quaker Oats' US Games and Twentieth Century Fox, now seem to have dozens of titles. Some of the stuff is very good, much more is mediocre, and the sheer numbers of games is so great that it is almost impossible to sort the wheat from the chaff.

Although the big numbers are still with VCS, third parties seem to be more interested in producing for Coleco-Vision, the hot new system, than in adding titles for Intellivision. Although I did not actually see any third-party Coleco-Vision cartridges, several were announced, and it seems like only a matter of time before they appear. Coleco itself continues to add outstanding titles, including a Rocky fight game with title graphics that look like they were done with a digitizer.

The video-game culture has grown so large that it was only a matter of time before a seamier side emerged. Wait no longer. There is now a full range of X-rated videogames available for the VCS. I would recommend these particularly for those who are nostalgic for the experience of learning the facts of life from a crude sketch of stick-figures coupling. If you get turned on just putting a hot dog in a bun, you might find them sexually exciting as well. More shocking is a couple of games based on the explicit-violence horror films Halloween and Texas Chainsaw Massacre. In the latter,



you play the deranged killer, and try to shred all the little people before your trusty Black and Decker runs out of gas. This one makes the perfect Sweetest Day present. If you are waiting for the public's good taste to drive these guys out of business, it will probably be a long wait.

#### Home Videogame Hardware:

The big word here is adaptor. I was surprised to see that Mattel showed along with its new Intellivision II a working VCS adaptor, playing Pac-Man! I did not see Coleco's VCS adaptor, probably because of Atari's lawsuit against them, but can an Intellivision adaptor be far behind? Meanwhile, Atari, whose VCS technology is so cheap to copy, can only sue everybody that says the word "adaptor" and hope for the best.

The new Intellivision II looked very nice, but I did not really have a chance to check its compatability both with the old Intellivision, and the new Mattel computers. Though the keyboard unit for Intellivision might have been there, it was not displayed prominently enough for me to see it.

#### Home Computer Hardware

Here the news was the creation of an under \$100 market. The most exciting was Texas Instrument's 99/2. This 16-bit machine has a calculator keyboard, a black and white display, a very attractive case, 4K of RAM (expandable to 36K), and will sell for \$99. Most interesting is that it will be cartridge-compatible with the 99/4A (does this mean that it has sprite graphics?). The storage device of choice is also interesting. TI has added a Wafertape, like Exatron's Stringy Floppy. This tiny continuous-loop tape cassette has a transfer rate about 1/3 as fast as a non-Atari disk drive (about the speed of an 810), and holds up to 64K per "wafer". The \$140 price tag is a whole lot easier to take than TI's current disk drive, which with controller, memory expansion, and expansion box adds up to almost \$1000. This device will also be usable with the 99/4A with the addition of a \$60 interface.

Timex was not standing still either. In the face of TI's entry, it was expected to cut the

1000 to \$79. Also, Timex announced the 2000, a 16K Z-80 color computer for \$150 (48K for \$200). The keyboard is calculator-type keys, though in a slightly larger format than TI's. This looks like just a U.S. version of Sinclair's Spectrum, and the most talked about, part of that system, the rumored under-\$100 disk drive, was not shown.

Also in the under \$100 range were a couple of keyboard add-ons that turn the VCS into a color computer. Though I did not get a chance to examine them too thoroughly, they demonstrate how great the interest in cheap home computers really is.

Commodore was showing a lot of impressive hardware for their new Commodore-64. Like the 1200, it has 64K RAM along with the BASIC and Operating System ROM, so that the BASIC and OS can be switched out and replaced by RAM in applications where they are not needed. Right now it is priced \$300 lower than the 1200 (\$599 list), with deep discounts to be expected soon. Especially impressive were the inexpensive peripherals shown. A speech synthesis module which produces the most natural-sounding female voice that I have ever heard come out of a computer was demonstrated, and will be priced well below \$100. To take advantage of the sound chip in the 64, whose register control waveform shaping allows you the same of range of sounds as expensive keyboard synthesizers in three voices, there was a piano keyboard attachment, also to be priced well below \$100. Perhaps most exciting was a graphics tablet with 500X500 resolution consisting of a clear vinyl sheet with microswitches imbedded in it. This could be used for drawing, as well as for input by preschoolers with the addition of printed overlays. No price announced, but you can be sure it will be under \$100 as well.

The 64 was not the only machine Commodore had on display. Near the 1,000,000th VIC was an under-\$1000 portable color computer. In an Osborne-like suitcase format, with the nicest-looking detachable keyboard that I have ever seen, this baby had a 5" color monitor and two disk-drives built in (you may get only one drive supplied at the under-\$1000 price). It probably will be 64-compatible, and at that unbelievable price, you can bet that there was a lot of interest shown.

Besides the familiar micro-makers, there

were scores of new faces in the personal computer market. Biggies like Panasonic and Mattel had new personal computers to show, and the Japanese were well represented by entries from NEC, Toshiba, Hitachi, and even TV manufacture Samsung (or was it Sampo?). The biggest surprise, however, came from video-game maker Spectravision. They showed a 32K computer with 16 color graphics, 3 channel ADSR sound synthesis, 32 sprites, and calculator-type keyboard like the TRS-80 color for \$300 retail! Even more amazing, it had a complete line of peripherals, including 80-column adapter and CPM 2.2 and 3.3 compatibility! Where did these guys come from, anyway?

#### All of the Above

In a class by itself was the unit shown by the virtually unknown Ultravision Corporation. It has features that could only be done justice by a late-night TV add produced by Popeil. How much would you pay for a powerful 64K color computer that is Apple II and CPM compatible? Before you answer, look at this beautiful built-in 13" color RGB monitor. This monitor has a tuner, and doubles as a color TV set. Lift the keyboard, off, replace it with an Ultravision VCS module, and presto, its an Atari-compatible video game. Switch to another module, and it plays all Coleco-Vision cartridges with ease. Now how much would you pay? What if I were to tell you that it had simulated stereo sound? Well, friends, the Ultravision is not \$1999, not \$1499, not even \$1299. With the color monitor, the 64K Apple & CPM keyboard, this little beauty is only \$999. And wait...if you order now we'll throw in a free DC adapter with cigarette light plug, so that you can play these same great games in your car! Sounds too good to be true, doesn't it? If I were you, I would wait before sending \$999 in cash or money order to: Ultravision, Box 999, Underwater Lots, FL 99995

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## MACE SIG GROUPS

MACE offers members the opportunity to explore specific applications of Atari Computing in Special Interest Groups (SIGS) where MACE folks with common areas of interest can meet more informally than would be possible at our general membership meetings.

The following groups have registered as official MACE Special Interest Groups:

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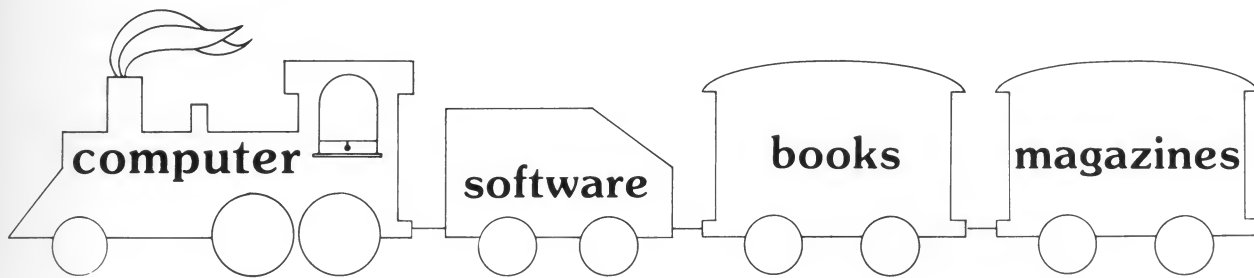
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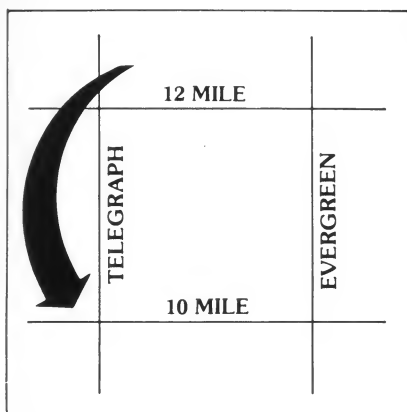
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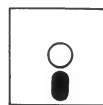
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# WATERFALL

by David Fox & Mitchell Waite

Here's a very nice GTIA demo downloaded from GREKELCOM, the Oklahoma City ARMUDIC Bulletin Board (405)-722-5056. Thanks to SYSOP Greg Leslie. If you like the program, I suggest you pick up the November '82 issue of BYTE magazine and read the excellent article on computer animation that accompanied it.

```

10 REM *** FALL WATERFALL ***
20 REM
30 REM
40 REM DEMONSTRATION OF ANIMATING A SCENE BY ROTATING THE
  COLOR REGISTERS
50 REM (USES GRAPHICS 10 - GTIA IS NEEDED)
60 REM COPYRIGHT (C) 1982 BY DAVID FOX AND MITCHELL WAITE
62 REM
63 REM
65 REM FROM NOV. '82 "BYTE" MAGAZINE
66 REM SUBMITTED BY MIKE RAY, OKC
67 REM
70 REM
80 GOTO 200
100 REM ROTATE COLORS
110 TEMP=PEEK(705):POKE 705,PEEK(706):POKE
  706,PEEK(707):POKE 707,PEEK(708):POKE 708,TEMP
120 FOR WT=1 TO 5:NEXT WT
130 GOTO 110
150 POKE 706,PEEK(707)
160 POKE 706,PEEK(707)
200 REM DATA FOR LOCATION OF TREES
210 FILL=1300
220 GRAPHICS 10
230 POKE 704,9*16+10:REM SKY,COLOR 0
240 POKE 705,8*16+10:REM WATER,COLOR 1
250 POKE 706,8*16+8:REM WATER,COLOR 2
260 POKE 707,8*16+6:REM WATER,COLOR 3
270 SETCOLOR 0,8,4:REM WATER,COLOR 4
280 SETCOLOR 1,12,4:REM TREE SHADOW,COLORS
290 SETCOLOR 2,2,4:REM CLIFF & TREE TRUNKS,COLOR 6
300 SETCOLOR 3,12,6:REM GRASS,COLOR 7
310 SETCOLOR 4,3,6:REM TREETOPS,COLOR 8
400 REM DRAW GRASS & CLIFF
410 COLOR 7:POKE 765,7:REM THE GRASS
420 PLOT 79,10:DRAWTO 79,45:X1=78:Y1=10:X2=66:Y2=15:GOSUB
  FILL
430 X1=65:Y1=15:X2=61:Y2=18:GOSUB FILL:
  X1=60:Y1=18:X2=56:Y2=25:GOSUB FILL
440 X1=56:Y1=25:X2=65:Y2=35:GOSUB FILL:
  X1=66:Y1=35:X2=78:Y2=45:GOSUB FILL
450 COLOR 6:POKE 765,6:REM THE CLIFF
460 PLOT 79,46:DRAWTO
  79,145:X1=56:Y1=26:X2=56:Y2=117:GOSUB FILL
470 Y1=117:X2=68:Y2=132:GOSUB FILL:

```

```

X1=68:Y1=132:X2=78:Y2=145:GOSUB FILL
480 COLOR 7:POKE 765,7:REM MORE GRASS
490 PLOT 0,191:DRAWTO 79,191:DRAWTO
  79,146:X1=0:Y1=191:X2=0:Y2=91:GOSUB FILL
500 REM DRAW THE FALLS AND RIVER
510 FALL=58:CFLAG=0:REM DRAW THE RIVER ON TOP OF THE CLIFF
520 FOR Y=25 TO 34
530 GOSUB 1500
540 FOR X=79 TO FALL STEP -1
550 COLOR COL
560 PLOT X,Y
570 COL=COL-1:IF COL=0 THEN COL=4
580 NEXT X
590 FALL=FALL+1
600 NEXT Y
610 FALL=0:CFLAG=-1:REM DRAW THE FALLS
620 FOR X=58 TO 66
630 FALL=FALL+1
640 GOSUB 1500
650 PLOT X,25+FALL
660 FOR Y=30 TO 120 STEP 4
670 COLOR COL
680 DRAWTO X,Y+FALL
690 COL=COL-1:IF COL=0 THEN COL=4
700 NEXT Y:NEXT X
710 COLOR 6:PLOT 58,28:DRAWTO 58,25:DRAWTO 59,25:PLOT
  66,38:DRAWTO 66,129:REM CLEANUP
720 COLOR 7:PLOT 73,33:DRAWTO 79,33:PLOT 68,34:DRAWTO
  79,34
730 FALL=57:CFLAG=1:REM DRAW THE RIVER ON THE VALLEY FLOOR
740 FOR Y=121 TO 128
750 GOSUB 1500
760 FOR X=FALL TO 0 STEP -1
770 COLOR COL
780 PLOT X,Y
790 COL=COL-1:IF COL=0 THEN COL=4
800 NEXT X
810 FALL=FALL+1
820 NEXT Y
900 REM DRAW THE TREES
910 FOR T=1 TO 11
920 READ X,Y
930 COLOR 8:REM TREETOP
940 FOR I=0 TO 2:PLOT X-I,Y-40+2*I:DRAWTO
  X-I,Y-20-2*I:NEXT I
950 FOR I=-2 TO -1:PLOT X-I,Y-40-2*I:DRAWTO
  X-I,Y-20+2*I:NEXT I
960 COLOR 6:REM TREE TRUNK
970 PLOT X,Y:DRAWTO X,Y-21
980 COLOR 5:REM SHADOW OF TREE
990 PLOT X,Y+1:DRAWTO X+7,Y+4:PLOT X+8,Y+3:DRAWTO
  X+8,Y-5:DRAWTO X+9,Y+6
1000 DRAWTO X+9,Y+3:DRAWTO X+10,Y+3:DRAWTO X+10,Y+7
1010 PLOT X+11,Y+7:DRAWTO X+11,Y+4:DRAWTO X+12,Y+5:DRAWTO
  X+12,Y+7
1020 COLOR 8:REM FALLEN LEAVES AROUND TREE
1030 FOR I=1 TO 15
1040 RX=X+INT(RND(1)*7)-3:IF RX=X THEN 1040
1050 RY=Y+INT(RND(1)*8)-3:PLOT RX,RY

```

```

1060 NEXT I
1070 NEXT T
1100 REM DRAW THE FOAM
1110 COLOR 0:REM SKY COLOR
1120 PLOT 57,114:DRAWTO 65,122
1130 PLOT 57,115:DRAWTO 65,123
1140 PLOT 57,116:DRAWTO 65,124
1150 PLOT 56,116:DRAWTO 65,125
1160 PLOT 56,117:DRAWTO 65,126
1170 PLOT 56,118:DRAWTO 65,127
1180 PLOT 56,119:DRAWTO 65,128
1190 PLOT 55,119:DRAWTO 64,128
1200 PLOT 55,120:DRAWTO 63,128
1250 REM TURN ON THE SOUND
1260 FOR I=0 TO 3:SOUND I,I*50,0,8:NEXT I
1270 GOTO 100
1300 REM FILL ROUTINE
1320 PLOT X1,Y1:POSITION X2,Y2:XID 18,#6,0,0,"S":RETURN
1500 REM CHOOSE COLOR
1510 COL=INT(RND(1)*4)+1:IF COL=STARTCOL THEN 1510:REM NO
2 ADJACENT COLOR STRIPS WITH THE SAME COLOR PATTERN
1520 STARTCOL=COL+CFLAG:REM CALCULATE NEXT STARTING COLOR
TO AVOID
1530 IF STARTCOL=0 THEN STARTCOL=4
1540 IF STARTCOL=5 THEN STARTCOL=1
1550 RETURN
2000 REM DATA FOR LOCATION OF TREES
2010 DATA 7,106,13,96,30,100,40,112,47,145,7,179,
15,155,27,164,35,173,60,181,66,174

```

---

## PRE-BASIC

By RICHARD GIZYNSKI

In my last article, I described how memory was held in individually read areas or addresses. Each address holds eight bits that form a byte (a character of information). There are 256 possible combinations that can be held by each byte. Now lets see how these characters can be used.

The heart of your Atari is a little silicon chip called a 6502. Another name for this chip is CPU or Central Processing Unit. The CPU, like a handyman for hire, looks for an instruction and then follows it. When it is done with the first instruction it looks for the next.

Each time you turn your Atari on, the CPU first goes to the permanent, Read Only Memory (ROM) section of memory called the Operating System. The operating system contains the instructions on how to handle the screen, get information from the keyboard, check to see what devices are attached, and all the housekeeping chores that the CPU has to perform to allow you to interact with your Atari.

Each instruction must be given to the CPU in a very simple, one step at a time form, like you might give a blindfolded man to guide him through a maze. The CPU has no way of sensing the difference between an instruction byte and a data byte so the first location in memory must be an instruction. That instruction must tell the CPU what to do first and then be followed by another instruction. Or, the first instruction must tell the CPU where to go in memory to get the next instruction. The programmer must be careful not to direct the CPU to a byte of data (a number, letter of a word etc.) when the CPU should be looking for an instruction. The CPU would take the data byte and treat it as an instruction and faithfully try to execute it. This level of instructions, the level the CPU works at, is called machine language.

Writing machine language instructions can be a very tedious and frustrating task. Programmers developed a language that was more human oriented, called assembler, to help them. Assembler languages act like a interpreter. A programmer can write in characters and numbers and the assembler translates this to the binary bytes that the CPU must have. To a beginning programmer, assembler is very confusing but much better than looking at columns of 0's and 1's.

BASIC is one of the high level languages. In Assembler, you write each detailed step the CPU needs but use letters and characters that are easier for you to understand. In higher level languages you may use a one or two word command. The language translates this command into the many small steps the CPU needs to act on the command.

In your Atari, the Basic Cartridge contains a program. It is the program in the Basic cartridge that is running. The program that you entered through the keyboard, cassette or disk is really data that the cartridge program will use to do what you want done. The fact that the program that you enter is data for the program in a cartridge is one of the most misunderstood (or completely unknown) concepts to a beginning programmer.

When you type in a Basic program, the program in the cartridge SAVES the program you enter in shorthand form. This process is called tokenization. One token, one command. When you LIST a program to screen, printer, cassette or disk, the program in the cartridge looks at the series of tokens and re-translates them back to English. This is an important concept for you to understand. It will make understanding Basic and your Atari easier. The program that you enter is data for the program cartridge.

## PUZZLE CORNER

by Charles Godfrey

### RECAP OF PUZZLE #5

Once there was a king who thought of himself as quite a mathematician. He told a prisoner, "Give me a problem to solve, and you may go free until I solve it. But as soon as I have the answer, off comes your head!" Now the prisoner was rather clever himself and here is the problem he gave the king.

The numbers 220 and 284 are amicable numbers. The sum of the proper divisors of 220 equal 284

$$1+2+4+5+10+11+20+22+44+55+110 = 284$$

and the sum of the proper divisors of 284 equals 220. Find the next pair of amicable numbers.

The story goes that the prisoner went free and finally died of old age because the king never solved the problem.

**AUTHORS DETERMINE WINNERS-** The authors of the MACE Puzzles presented here are responsible for determining the winners to their respective puzzles. Any questions concerning a puzzle should be directed to the particular author involved. MACE will award the prizes either in person at a meeting, or by mail. Contestants must be sure to CLEARLY print your name, address, and telephone number so that we can contact you if necessary.

Anyone wishing to submit a puzzle may do so. Write or call the puzzle master for further information.

### PUZZLE #5 SOLUTION

It must be rather dull letting your computer run for several hours (days?) just to print a dumb list of amicable numbers. That opinion comes from the lack of entries to the last puzzle. Amicable numbers were illustrated by the pair 220 and 284. The sum of all the proper divisors of 220 equals 284, and the sum of all the proper divisors of 284 equals 220. The problem was to submit a computer list of as many possible amicable numbers as your computer could generate.

Future puzzles will have to have a shorter

solution, or somebody may end up in hot water at work. One person let the job run for 9 hours on an Amdahl 470. (Do you know what an Amdahl can do in 9 hours?!) Other machines were a DEC, an IBM Mainframe, and of course an Atari. Only two languages were used this time, Basic and Fortran.

The winning entry was submitted by David Bowen who solved the problem with Atari basic on what else but an Atari. Dave let his computer run for six continuous days. His last pair of numbers were 100485 and 124155. His program is somewhat lengthy, so a shorter one is presented here if you would like to give your computer something to do to start the new year.

```
110 FOR A=1 TO 9999999
120 S=0
130 FOR D=1 TO A/2
140 IF A/D <> INT(A/D) THEN 160
150 S=S+D
160 NEXT D
170 IF S<= A THEN 260
180 B=S
190 T=0
200 FOR F=1 TO B/2
210 IF B/F <> INT(B/F) THEN 230
220 T=T+F
230 NEXT F
240 IF T <> A THEN 260
250 PRINT A;" AND ";B;" ARE AMICABLE
NUMBERS"
260 NEXT A
270 END
```

### MACE PUZZLE #6

Credit for this puzzle goes to this months winner David Bowen who sent it along with his winning entry.

To test a group of 100 rats, a straight line 1000 feet long is marked on the ground. One end is marked "start" and the other end is marked "finish". Next, 1000 kernels of corn are placed on the line at one-foot intervals, starting one foot from the start and ending at the finish. The rats are released at the start one at a time. The rats proceed along the line according to the following rules:

1. A rat that has not eaten a kernel of corn for at least one minute is hungry, and will eat the



first available kernel. A rat that has not eaten for two minutes will eat the first two kernels, and so on.

2. A hungry rat runs at one foot per second. A full rat walks at two seconds per foot.

3. It takes one second to eat a kernel of corn.

4. All rats are full at the start of the trail.

5. As soon as a rat crosses the finish, the next rat is released at the start.

**PROBLEM:** Exactly how long does it take for all rats to complete the course?

This puzzle is not difficult, but it must be interpreted correctly. If you do not understand a certain point, please call otherwise your answer may be programmatically correct, but still wrong. All solutions must be received by midnight the day before the February meeting.

Send your solutions to:

Charles Godfrey  
29646 Chelmsford  
Southfield, MI 48076  
(313) 559-1272



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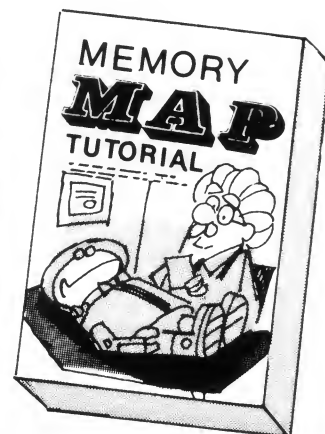
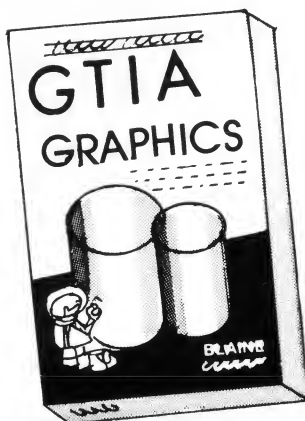
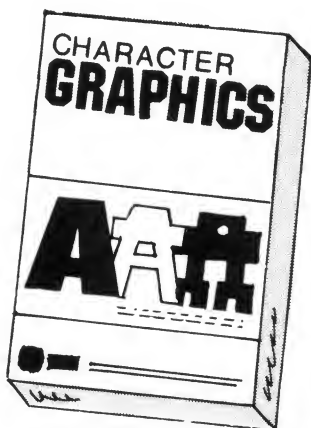


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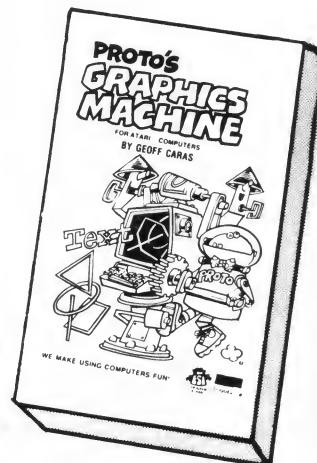
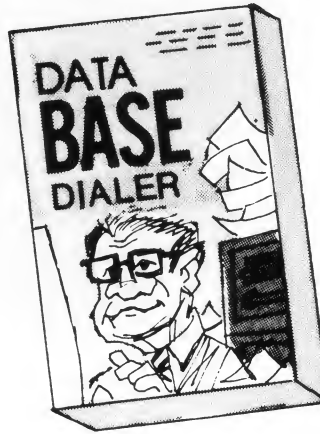
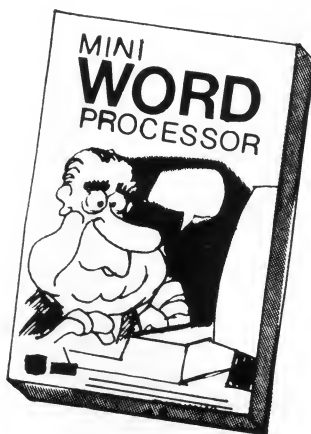
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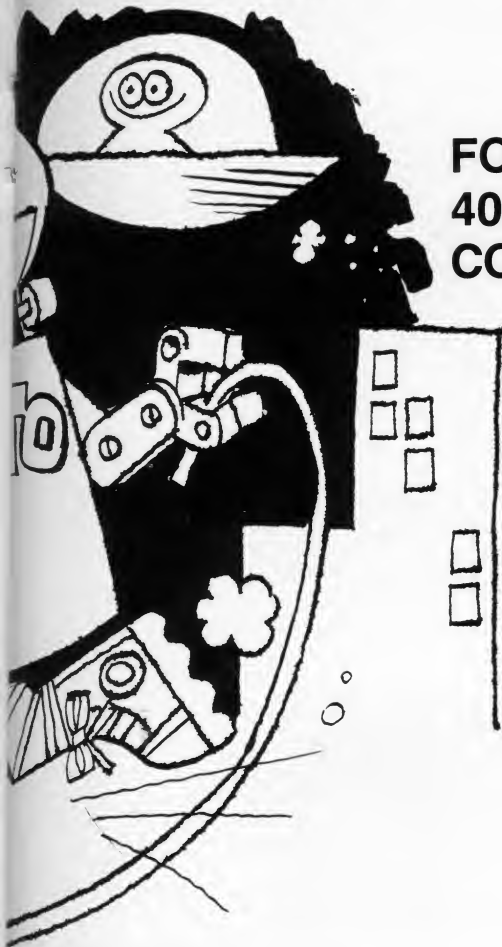
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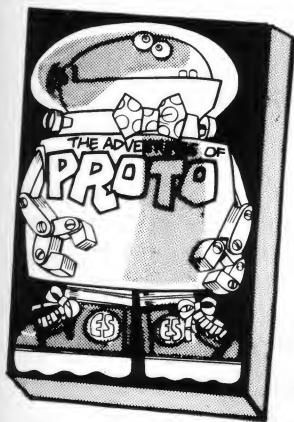
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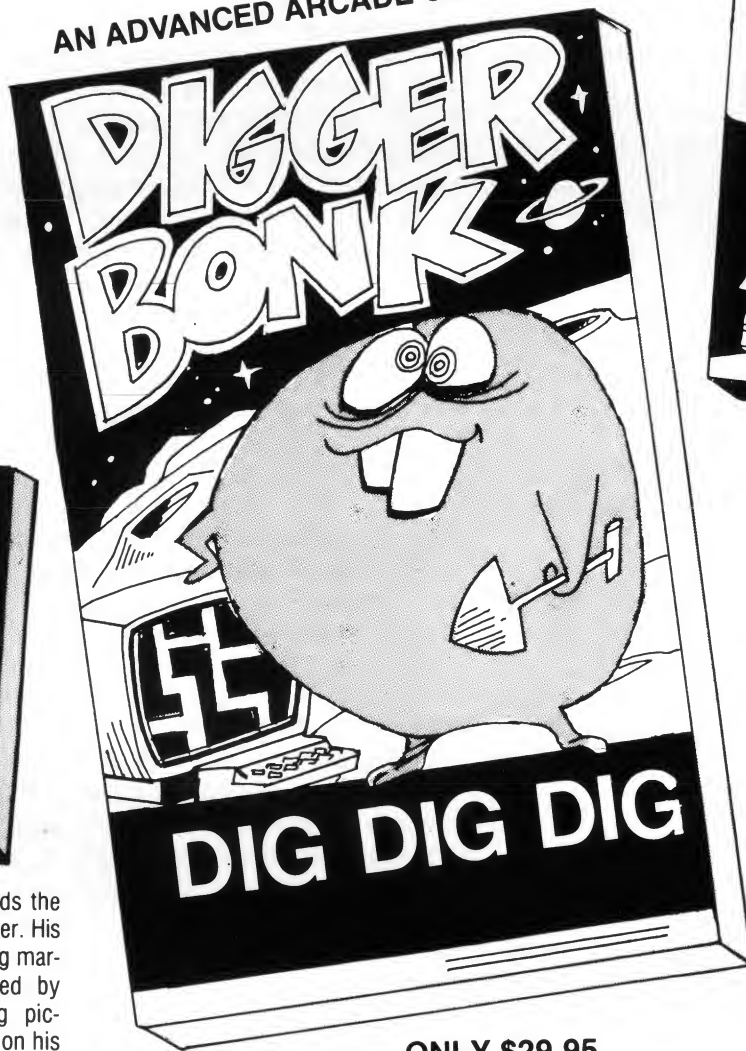


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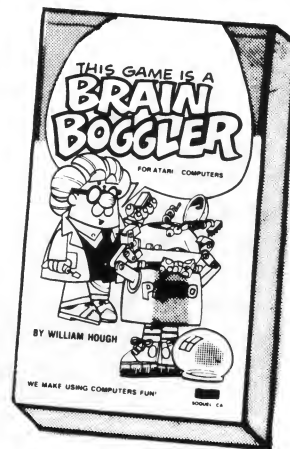


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## BAKER STREET BYTES

### -- MEMORY MOVER -- AND SCREEN SAVE

by Richard Gizynski

MEMORY MOVER was written to demonstrate the use of BASIC strings to move massive amounts of memory at machine language speed. Advanced BASIC programmers will find these routines helpful to move player-missile graphics or other data to new locations quickly. Less advanced programmers may use this program to design, save and recall game-board screens and everyone will find this a fun way to doodle on the screen and get some useful insight on how strings are managed in Atari Basic.

This program works on either disk or cassette based systems with 24k or more memories. It can be condensed to fit into 16k machines by removing all of the REM statements, replacing the constants with variables, and using multiple statement lines. A nice feature is the use of a string that has been DIMed to 1 to handle over 4k of memory. This is done by modifying the variable value table after BASIC has performed its space allotment. I used modified strings to move data around in memory and not pay a penalty in DIMed string overhead. Now on to the program.

It is important in this program that SCREEN\$ is the first variable on the variable tables. After you have typed in the program, LIST it to disk or cassette and then re-ENTER it. This will clean up the variable tables and put SCREEN\$ in the first position and easy to find in the variable value table.

Lines 50 to 220 are the drawing routine. Lines 50 to 110 set up the screen and provide instructions for the program user. In lines 120 through 160, I use subscripted variables to help change the X and Y locations of the cursor. That eliminates a lot of IF-THEN statements and leaves only those needed to check for the edge of the screen. If you modify this program for other graphics modes, don't forget to change the maximum X and Y values. Lines 170 through 210 are used to detect the end of the drawing routine, change color, and provide erasing of lines already drawn. You might wish to add lines to change the color, luminosity, etc. Don't forget to add routines to re-insert those changes after you bring the screen back from storage. Line 220 puts the dots on the screen and loops back.

The flashing routine in lines 250-360 is a graphic way to demonstrate the memory mover technique. Line 250 through 310 provide instructions and reset the graphics mode. After a GRAPHICS command, it is necessary to reposition SCREEN\$ to overlay the new screen position. This must be done before you use this string after a GRAPHICS command even if you stayed in the same mode. Lines 320 and 330 look for a signal to end the routine or to change strings.

Lines 340 and 350 do the real work by making SCREEN\$ equal to one of the holding tank strings. Instead of moving the screen data pointer, I moved all of the screen data, including the display list. As a program routine, this is not efficient but it is a graphic way of demonstrating the memory mover. When you run the program, you will see that you can swap 4200 bytes of memory fast enough to superimpose two images on the screen at apparently the same time. If you can do it that fast for screen data, you can do it that fast for other data. Line 360 loops you back for more exchanges.

Lines 370 through 510 initialize the program. SIZE sets both holding strings to the correct DIMension for GRAPHICS 7. Room has been allowed for both the display list and screen data. If you modify this program for other graphics modes, don't forget to change the pokes on line 1060-1070, 1100-1110 and 1360 to conform to the new graphics mode memory requirements. Line 430 loads a machine language input/output routine into a string call CIO\$. Lines 450 and 460 load the subscripted variables used to read the joystick. Lines 490 to 510 remove all data from the holding tank strings SHOLD1\$ and SHOLD2\$ and open them up to their DIMed length. If these strings are not opened up, SCREEN\$ might send or receive only one byte of data. The string cleaning was thrown in just to show you a fast way of doing it.

Lines 520-610 were added so you could bringing back a screen that you had previously stored without going through the drawing routine.

Lines 620-740 send the program through two draw and save cycles. The variable T stands for test. This was added to show you that the text data is also being moved. Screen data addresses change each time a GRAPHICS command is used. SCREEN\$ must be repositioned to conform to the changed data address. This is done by the GOSUB 940. The variables OP1 and OP2 stand

for Operation. OP1 is used to open an I/O control block for input or output operations. OP2 does the same for a CIO location called on by the machine language routine. These variables and WORD\$ saved writing different routines for input and output.

Line 750 sends the program to the flashing routine and lines 760-870 call for screen data to be brought in from outside storage and flashed on the screen in the flashing routine. 880 ends the program when you are finished experimenting and 890-920 contain the DATA needed for the CIO\$ string machine language routine and the joystick readers.

The heart of this program is in lines 930-1140. BASIC addresses strings and subscripted variables by their offset from the start of the array table instead of their absolute address in memory. To modify a string's address, you must first find out where the array table is. Next, since the strings offset address, current size and DIMensioned size is kept in the variable value table, you must find the value table and the string's position in it. By naming SCREEN\$ first in the program, SCREEN\$ has the first position on all of the variable tables. The second named variable has the second position and so fourth.

In the variable value table, byte zero and one tell what kind of variable it is and what number variable it is. In string and array variables, byte two and three tell its offset from the start of the array table. In string variables, Byte four and five tell how long it is at a given moment in the program and byte six and seven tell how long it has been DIMensioned to.

I documented this section with wordy variable names and lots of REM statements for easy future refferance. Each string variable repeats this pattern. If you need more than one string mover for future programs, DIM it second (etc.) in the program. That way it will be easy to find on the value table.

Lines 1150 to 1390 are the input/output section. A TRAP statement on line 1170 protects the program from crashing through careless naming of disk files. Lines 1180-1260 get the proper I/O device and a file name if necessary. Line 1270 first closes a file that may have been left open due to error then. Then it OPENS I/O control block one with the code controlled by OP1 and the appropriate name carried by DISKN\$. Lines 1280 sets the correct GRAPHICS mode and insures that string SCREEN\$ overlays

the screen data area. If their is an output operation, line 1290 puts the information to be transmitted on the screen. Line 1310 tells CIO (Central Input/Output, a part of the operating system) what kind of I/O operation will be handled. Lines 1340 tell CIO where to start taking its data. Line 1360 tell how many bytes of data to take and line 1370 call the CIO to action via a short machine language routine. The 16 tells CIO that control block one is being used. Line 1380 CLOSEs the control block and removes the trap so that any other errors in the program can be detected and referanced. If there is an error in I/O operations, the error is TRAPed to lines 1400-1410 which allow you to recover by finding out what is wrong and correcting it without loosing the screen you have drawn.

I hope you enjoy this program as much as I have enjoyed writing it for you. Your comments would be greatly appreciated. Write Richard Gizynski, 519 W. Baker, Clawson, MI 48017.



```

10 REM MEMORY MOVER AND SCREEN SAVER
20 REM BY RICHARD GIZYNSKI
30 DIM SCREEN$(1):GOTO 370
40 REM SCREEN DRAWING ROUTINE
50 GRAPHICS 7:C1=1
60 ? "TEST ";T;" JOYSTICK DRAWS LINE"
70 ? "FIRE BUTTON ERASES DRAWING"
80 ? "SELECT CHANGES COLOR"
90 ? "START BUTTON SAVES DRAWING";
100 X=50:Y=50:PLOT X,Y
110 COLOR C:S=STICK(0)
120 X=X+JOYX(S):Y=Y+JOYY(S)
130 IF X<0 THEN X=0
140 IF X>159 THEN X=159
150 IF Y<0 THEN Y=0
160 IF Y>79 THEN Y=79
170 POKE BUTTON,8:IF PEEK(BUTTON)=6
THEN RETURN
180 IF PEEK(BUTTON)=5 THEN C1=C1+1:FOR
I=1 TO 40:NEXT I
190 IF C1>3 THEN C1=1
200 IF STRIG(0)=1 THEN C=C1
210 IF STRIG(0)=0 THEN C=0
220 PLOT X,Y:GOTO 110
230 REM FLASHING ROUTINE
240 GRAPHICS 0
250 ? "READY FOR FLASHING ROUTINE"
260 ? "THIS ROUTINE MOVES 4,192 BYTES OF"
270 ? "MEMORY AS FAST AS YOU CAN PRESS
THE"
280 ? "FIRE BUTTON. WHEN YOU ARE DONE"
290 ? "EXPERIMENTING, PRESS THE START
BUTTON"
300 ? :? "PRESS RETURN TO START
ROUTINE":INPUT ANSWER$
310 GRAPHICS 7:GOSUB 930
320 POKE BUTTON,8:IF PEEK(BUTTON)=6
THEN RETURN
330 S=STRIG(0)
340 IF S=0 THEN SCREEN$=SHOLD2$
350 IF S=1 THEN SCREEN$=SHOLD1$
360 GOTO 320
370 REM INITIALIZATION
380 SIZE=4192:V256=256:BUTTON=53279
390 DIM SHOLD1$(SIZE),SHOLD2$(SIZE)
400 DIM
JOYX(15),JOYY(15),DISKN$(15),FILENAME$(12)
410 DIM C$(1),ANSWER$(1),CIO$(7),WORD$(10):
C$=CHR$(0)
420 REM BUILD CIO STRING
430 FOR I=1 TO 7:READ
S:CIO$(I,I)=CHR$(S):NEXT I
440 REM LOAD JOYSTICK DATA
450 FOR I=1 TO 15:READ S:JOYX(I)=S

```

```

460 READ S:JOYY(I)=S:NEXT I
470 GOSUB 930:REM MODIFY STRING SCREEN
480 REM OPEN UP CLEANED STRINGS
490 SHOLD1$=C$:SHOLD1$(SIZE)=C$
500 SHOLD1$(2,SIZE)=SHOLD1$
510 SHOLD2$=SHOLD1$
520 REM CHOOSE FUNCTION
530 GRAPHICS 0
540 ? :? "DO YOU WANT TO DRAW PICTURES
OR BRING"
550 ? "BACK THOSE YOU HAVE DRAWN?"
560 ? :? "TYPE D FOR DRAW"
570 ? " B FOR BRING BACK":?
580 ? "THEN TYPE RETURN":?
590 INPUT ANSWER$
600 IF ANSWER$="B" THEN 810
610 IF ANSWER$<>"D" THEN 530
620 REM DRAW 2 PICTURES AND SAVE EACH
630 REM DRAWING 1
640 T=1:GOSUB 50
650 GOSUB 940
660 SHOLD2$=SCREEN$:SHOLD1$=SHOLD2$
670 OP1=8:OP2=11
680 WORD$="SAVE TO"
690 GOSUB 1160
700 REM DRAWING 2
710 T=2:GOSUB 50
720 GOSUB 940
730 SHOLD1$=SCREEN$
740 GOSUB 1160
750 GOSUB 230:REM FLASHING TEST
760 GRAPHICS 0:
770 ? "ALL SCREEN DATA WILL BE
OVERWRITTEN"
780 ? "BY DATA THAT WILL BE BROUGHT
BACK"
790 ? "FROM THE STORAGE MEDIA"
800 FOR I=1 TO 500:NEXT I
810 WORD$="BRING FROM"
820 OP1=4:OP2=7
830 GOSUB 1160
840 SHOLD2$=SCREEN$
850 GOSUB 1160
860 SHOLD1$=SCREEN$
870 GOSUB 230
880 GRAPHICS 0: ? "THIS COMPLETES THE
TEST":END
890 DATA 104,104,104,170,76,86,228
900 DATA 0,0,0,0,0,0,0,1,1
910 DATA 1,-1,1,0,0,0,-1,1,-1,-1
920 DATA -1,0,0,0,0,1,0,-1,0,0
930 REM MODIFY ADDRESS OF SCREEN$
940 DISPLAYLIST=PEEK(560)+
V256*PEEK(561)
950 VARIABLETABLE=PEEK(134)+V256*
PEEK(135)

```



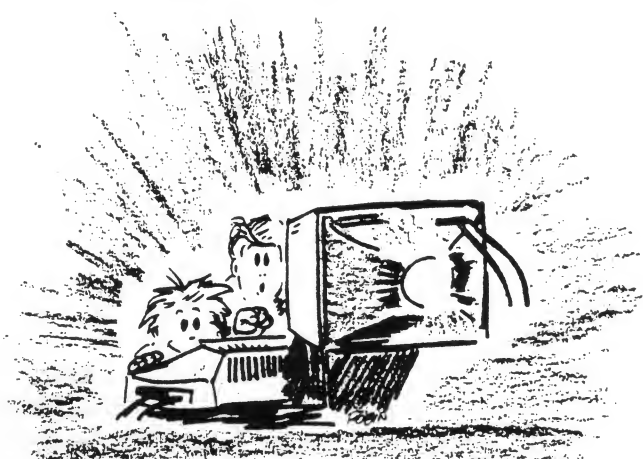
```

960 ARRAYTABLE=PEEK(140)+V256*PEEK(141)
970 OFFSET=DISPLAYLIST-ARRAYTABLE
980 HI=INT(OFFSET/V256)
990 LO=OFFSET-V256*HI
1000 REM LOW & HI BYTE OF NEW ADDRESS
1010 REM OF STRING SCREEN$
1020 POKE VARIABLETABLE+2,LO
1030 POKE VARIABLETABLE+3,HI
1040 REM LOW & HI BYTE OF NEW CURRENT
1050 REM SIZE OF STRING SCREEN$
1060 POKE VARIABLETABLE+4,100
1070 POKE VARIABLETABLE+5,16
1080 REM LOW & HI BYTE OF NEW DIMED
1090 REM SIZE OF STRING SCREEN$
1100 POKE VARIABLETABLE+6,100
1110 POKE VARIABLETABLE+7,32
1120 SCREENHI=INT(ADR(SCREEN$)/V256)
1130
SCREENLO=ADR(SCREEN$)-SCREENHI*V256
1140 RETURN
1150 REM NAMING THE OUTPUT FILE
1160 GRAPHICS 0
1170 TRAP 1400
1180 ? :? "DO YOU WISH TO ";WORD$
1190 ? "DISK OR CASSETTE [D/C]?":?
1200 ? "TYPE D FOR DISK OR C FOR
CASSETTE";
1210 INPUT ANSWER$
1220 IF ANSWER$="C" THEN
DISKN$="C:";GOTO 1270
1230 IF ANSWER$<>"D" THEN GOTO 1160
1240 ? :? "TYPE IN THE FILENAME AND
PRESS RETURN"
1250 INPUT FILENAME$
1260 DISKN$="D:";DISKN$(3)=FILENAME$
1270 CLOSE #1;OPEN #1,OP1,0,DISKN$
1280 GRAPHICS 7;GOSUB 940
1290 IF OP1=8 THEN SCREEN$=SHOLD1$
1300 REM SET UP IOCB
1310 POKE 850,OP2
1320 REM LOW BYTE AND HI BYTE OF
1330 REM WHERE TO START MOVING DATA
1340 POKE 852,SCREENLO;POKE 853,SCREENHI
1350 REM LOW & HI BYTE OF HOW MANY
BYTES TO MOVE
1360 POKE 856,100;POKE 857,16
1370 X=USR(ADR(CIO$),16)
1380 CLOSE #1;TRAP 50000
1390 FOR I=1 TO 200:NEXT I;RETURN
1400 ? :? "YOU HAVE MADE AN ERROR"
1410 ? :? "PLEASE TRY AGAIN;GOTO 1160"

```

## TELECOMMUNICATIONS SIG FORMING

It seems that our December telecommunications issue was popular enough to create a rush on modems in the local stores last month. Why not get the most out of your new piece of gear by joining MACE's new TELE/SIG? Learn how to effectively use MACE terminal, AMODEM 4.2, JONESTERM, local bulletin boards, Compuserve SIG/ATARI and Atari to Atari file transfer. For meeting info, leave a message at 399-6964 during human hours. Looking forward to seeing you there!



## SIG/ATARI ON COMPUSERVE

Of special interest to Atari modem owners is the extensive Atari SIG (special interest group) in the computer club area of Compuserve, which may be reached by typing "G PCS-132" from the Compuserve main menu. SIG/ATARI features a large electronic message board, an on-line conference area where you can converse via keyboard with other Atari users all over the country and an area called ACCESS which contains public domain programs for the Atari.

# DRAGON'S EYE

Automated Simulations  
(40k Basic Disk)

## Review

By Stephen E. Simon

Dragon's Eye is a fantasy, role playing, graphic adventure game from Epyx/Automated Simulations. For those of you unfamiliar with Epyx's games of this genre, one finds himself in a strange land - usually on a quest of some sort - in this case the recovery of the magical "Dragon's Eye". The Evil Necromancer has threatened to turn the Seven Provinces, ruled by the enlightened Good Magician, into the Deserted Lands, using the power of the "Eye". You are the Good Mage's champion, and your task is to find the Dragon's Eye, and return it to Fel City within 21 days. The task is made all the more formidable by the presence of various monsters, which roam the Seven Provinces, on a random basis.

After booting up, you are asked to input the name of your alter-ego. Upon doing so, you are asked to choose a Coat of Arms, from 21 various choices. After this, you are given a choice of swords, ranging from the Great Sword, Short Sword, Thrusting Sword, and Scimitar. Once you have finished inputting the above information, you find yourself looking at a detailed map, of the Seven Provinces. The map not only shows your current location, but gives vital information, as to the elapsed time since you started, your strength, health, aura (important for casting magic spells), power (also important in spell casting), weather, and type of movement (important in evading some of the nastier inhabitants of each province).

All command is by keyboard entry, which is not as bad as it seems. A "cheat" card is provided with the various commands. Commands are divided up into two groups - movement and battle. Although a little confusing at first, even the novice adventurer should be able to move anywhere he chooses, or hold his own in battle, after about 10 minutes of play. Also included in the movement commands, are commands for resting (helpful when tired or injured), spell casting, and use of various vials (imbibed to restore ones health or strength, when wounded or tired).

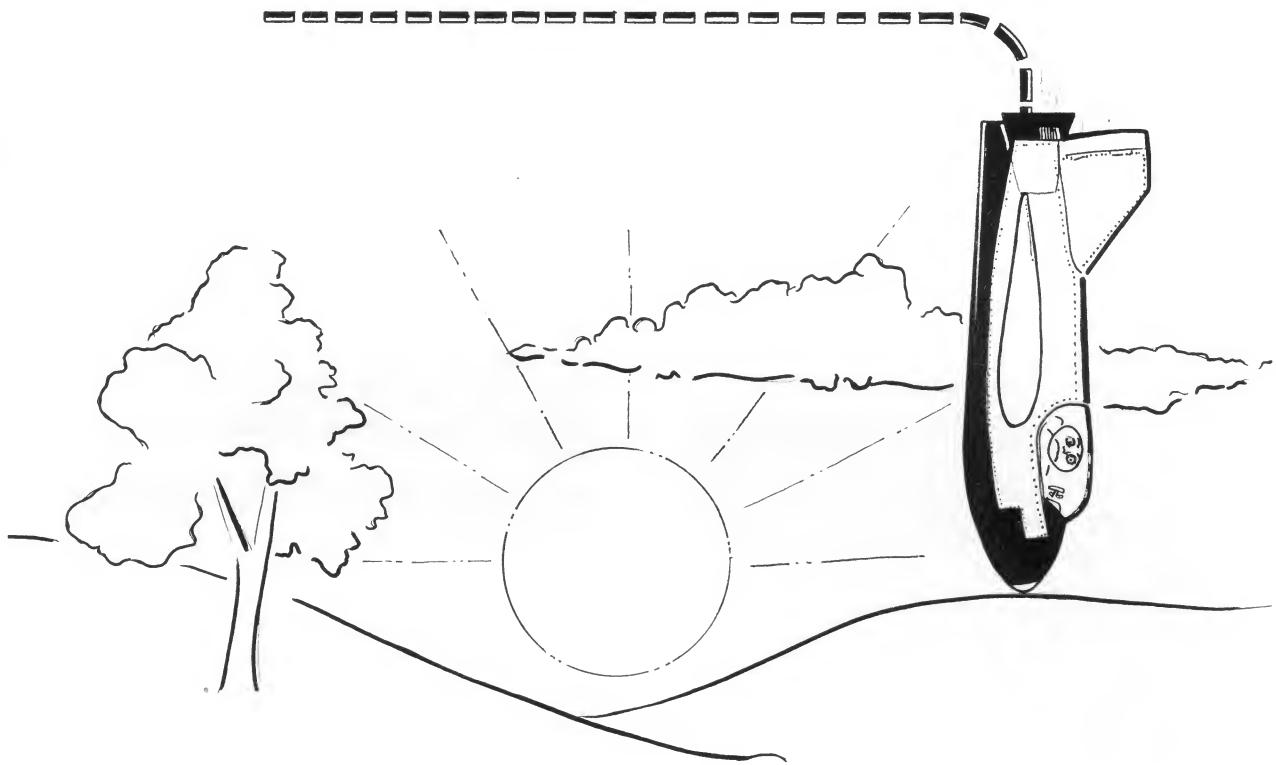
It is in the battle sequences that this game really shines. Suppose you are wandering around the provinces, and come across a monster. You are given the option of running away (which is not always possible), or fighting. Should you opt to do battle with the monster, you are given a new screen depicting your character, as well as the monster. At this point, you are also updated on the top of the screen as to: the numbers of arrows, magic bolts, and vials in your possession, as well as the monster type being encountered, and its condition. The bottom of the screen shows your current battle command, direction of movement, and current status of strength, health, and aura. Once in battle your little figure responds to your input with very detailed, life-like, animated movements. I have a friend who was a fencer in college, who was impressed with the realism of the swordfighting sequences. In addition to this, the monsters actually fight back, Dragons bite, Golems smash you with their clubs etc.

Those who are lucky enough to survive battle, often find hidden treasures, which may aid them in their quest. Even those who perish in battle, have a chance that the Good Magician may find them, and restore them to life, albeit at a reduction in strength, health, and aura.

The game is played in simulated time, with the 21 days elapsing in about 45-60 minutes, for those fortunate enough to live that long. Although designed as a single person game, it is possible to play it on a collaborative basis, with one or more friends. I often play and my four year old son calls out the battle commands, "Shoot the dragon with an arrow daddy!" Together we have amassed enough treasure, and have killed enough monsters, to be rated as "Very Good" players. We have yet to find the Dragon's Eye, though.

Because of the way the game is programmed, it will be different each time you play it. You will not find the same monsters, treasures, or the Dragon's Eye in the same place, as the last time you played. Due to the relatively short timespan of the game, it cannot be saved in progress, and returned to at a later date. All in all, I would say that EPYX has a winner. Now if you'll excuse me, there's a Dragon in the Lofty Mountains that I've got an old score to settle with .....

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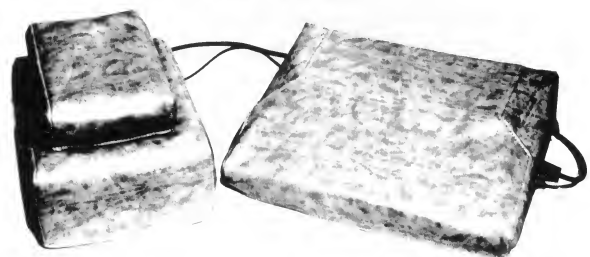
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## AMODEM 4.2

A Telecommunications Program  
for Atari Home Computers  
equipped with modem, disk drive,  
and Atari 850 Interface

by Jim Steinbrecher

[Editor's note: I would like to personally apologize for running what some astute readers recognized as the last half of the AMIS bulletin board software under this title in the December issue. Your editor violated a cardinal rule: RUN it before you print it. I can only attribute this monumental goof to an inordinate lack of sleep and indefensible inattentiveness. What follows is indeed the AMODEM 4.2 terminal program. The one sector AUTORUN.SYS file that comes on the DOS 2.0 master diskette must be on the disk that you use to boot into BASIC. Make sure that you power the 850 interface on BEFORE turning on your console unit's power. Due to the space limitations imposed by this reprint, the article on Download and Upload will be in the February issue. Again, my sincere apologies.]

```
10 REM AMODEM4.BAS:VER 4.2; 11-24-82
20 GOTO 10000
1000 TRAP 1000:GOSUB 13000: ? ? " OPTION = TOGGLE MEMORY
SAVE"
1010 ? ? " SELECT = (ABORT,B,C,D,M,P,R,S,T,U)"
1020 ? ? " START = START TRANSMISSION"
1030 SETCOLOR 2,7,2:C=CHR$(SRFLAG):IF SRFLAG=ZERO THEN
C$=" ";FILE$=C$
1040 ? C$;" FILE = ";FILE$;?
1042 IF NOT TRN THEN ? "xxx ASCII";
1044 IF TRN THEN ? "xxx ATARI";
1046 ? " TERMINAL MODE xxx"
1050 ADDR=USR(ADR(ID$),ADDR,LEN(BUFF$)+ADDR-1)
1055 C=PEEK(706):IF C=8 THEN PUT #MODEM,19: ? "xxx BUFFER
FULL xxx":GOTO 1700
1200 IF C=6 THEN 5000
1210 IF C=5 THEN 6000
1220 IF C<3 OR SRFLAG<67 THEN GOTO TERM
1230 MSAVE=NON-MSAVE:POKE 704,MSAVE: ? ? "CAPTURE ";
1240 IF MSAVE THEN SETCOLOR 2,0,2: ? "ON ";
1250 IF NOT MSAVE THEN SETCOLOR 2,7,2: ? "OFF ";
1260 ? ADDR-BUFF;" BYTES"
1270 IF PEEK(CON)=3 THEN 1270
1280 GOTO TERM
1500 ? ? ? "xxx NEW CAPTURE FILE xxx"
1510 ? "xxx SELECT D WILL SAVE IT:xxx"
1520 ADDR=BUFF:GOSUB 13000
1530 SETCOLOR 2,0,2:POKE 766,1
1540 MSAVE=1:POKE 704,MSAVE:GOTO TERM
1700 ? :CLOSE #MODEM:IF ADDR<=BUFF THEN ? "xxx BUFFER IS
EMPTY xxx":GOTO 1760
1710 TRAP 1760: ? "xxx SAVING MEMORY xxx"
```

```
1720 OPEN #FILE,8,ZERO,FILE$
1730 OBJ=1:IF TRN THEN OBJ=0
1740 POKE 1536,OBJ
1750 C=USR(1610,BUFF,ADDR)
1760 MSAVE=ZERO:POKE 704,MSAVE:ADDR=BUFF:L$=""
1790 SRFLAG=ZERO:GOTO MENU
2000 TRAN=32:GOSUB ID:A=NAK:POKE 766,1
2010 SETCOLOR 2,4,2:BLOCK=ZERO
2020 ? ? ? "xxx RECEIVING ";FILE$;" xxx"
2300 POKE 77,ZERO:FOR TRY=NON TO ERRTRY-NON
2310 ? ? ? "xxx GETTING SECTOR ";BLOCK+NON;" / ";TRY;" xxx"
2315 IF PEEK(CON)=5 THEN A=CAN
2320 PUT #MODEM,A:A=ACK
2330 GET #MODEM,SH:SUM=SH:IF SH=EOT OR SH=CAN THEN 2380
2340 GET #MODEM,C:SUM=SUM+C:GET #MODEM,C:SUM=SUM+C
2350 ADDR=BLOCK*128+BUFF:FOR BLK=0 TO 127:GET
#MODEM,C:POKE ADDR+BLK,C: ? CHR$(C);:SUM=SUM+C:NEXT BLK
2360 GET #MODEM,C:SUM=ASC(CHR$(SUM)):IF C=SUM THEN 2380
2370 A=NAK:FOR C=NON TO 400:NEXT C:GOTO 2390
2380 TRY=ERRTRY
2390 NEXT TRY:BLOCK=BLOCK+1
2500 IF SH=EOT AND A=ACK THEN 2800
2510 IF SH=CAN OR A<>ACK THEN 2900
2530 GOTO 2300
2800 PUT #MODEM,ACK: ? ? ? "xxx SAVING FILE xxx":TRAP 2860
2805 C=PEEK(ADDR+127)
2810 FOR A=ADDR+C TO ADDR+127:IF PEEK(A)<>C THEN C=128
2812 NEXT A:ADDR=ADDR+C:CLOSE #MODEM
2820 OBJ=ZERO:A=PEEK(BUFF):IF A>ZERO AND A<255 THEN
OBJ=NON
2825 A=ZERO:IF FILE$(1,1)="C" AND OBJ=ZERO THEN A=128
2830 IF TRN THEN OBJ=ZERO
2840 POKE 1536,OBJ:POKE 195,NON: ? "xxx ";ADDR-BUFF;"
BYTES"
2850 OPEN #FILE,8,A,FILE$:C=USR(1610,BUFF,ADDR)
2860 GOTO 2990
2900 ? ? ? "xxx UNABLE TO RECEIVE FILE":A=NAK
2910 PUT #MODEM,CAN
2990 SRFLAG=ZERO:GOTO MENU
3000 TRAN=32:GOSUB ID:POKE 766,1
3010 SETCOLOR 2,NON,2:BLOCK=ZERO:BYTE=BYTES
3020 ? ? ? "xxx SENDING ";FILE$;" xxx"
3300 POKE 77,ZERO:FOR TRY=NON TO ERRTRY
3310 ? ? ? "xxx SENDING SECTOR ";BLOCK+NON;" / ";TRY;" xxx"
3320 PUT #MODEM,SOH:SUM=ZERO
3330 PUT #MODEM,BLOCK+NON
3340 PUT #MODEM,254-BLOCK
3350 ADDR=BLOCK*128+BUFF:FOR BLK=0 TO
127:C=PEEK(ADDR+BLK):PUT #MODEM,C: ?
CHR$(C);:SUM=SUM+C:NEXT BLK
3360 SUM=ASC(CHR$(SUM)):PUT #MODEM,SUM
3370 GET #MODEM,A:IF A=CAN OR PEEK(CON)=5 THEN 3900
3380 IF A<>ACK THEN 3400
3390 TRY=ERRTRY
3400 NEXT TRY:BLOCK=BLOCK+1
3500 IF A<>ACK THEN 3900
3510 BYTE=BYTE-128:IF BYTE>ZERO THEN 3300
3800 PUT #MODEM,EOT:PUT #MODEM,ZERO
```



```

3810 ? :? "xxx TRANSFER COMPLETE xxx"
3820 GOTO 3990
3900 ? :? "xxx UNABLE TO SEND FILE xxx"
3910 PUT #MODEM,CAN
3990 GOTO MENU
4000 ? :CLOSE #MODEM
4010 FOR C=49 TO 52
4020 L$="D1:x,x":L$(2,2)=CHR$(C)
4030 TRAP 4060:OPEN #FILE,6,ZERO,L$:? L$:TRAP 4050
4040 INPUT #FILE;L$:? L$:GOTO 4040
4050 PRINT
4060 TRAP 4065:CLOSE #FILE
4065 IF DR=NON THEN 4080
4070 NEXT C
4080 DR=ZERO:L$="":GOTO MENU
4500 POKE 766,MON:SETCOLOR 2,2,2: ? "xxx UPLOADING
";FILE$;" xxx"
4510 FOR I=BUFF TO BUFF+BYTES-129+BYTE
4520 PUT #MODEM,PEEK(I):IF PEEK(CON)=5 THEN ? :? "xxx
ABORTED xxx":GOTO 4550
4530 STATUS #MODEM,C:BLK=PEEK(747):IF BLK THEN FOR A=NON
TO BLK:GET #MODEM,C: ? CHR$(C):NEXT A
4540 NEXT I
4550 FOR I=1 TO 100:NEXT I
4560 STATUS #MODEM,C:IF PEEK(747) THEN GET #MODEM,C: ?
CHR$(C):GOTO 4560
4570 ? :? "xxx UPLOAD COMPLETE xxx":GOTO MENU
5000 IF SRFLAG=67 THEN 1500
5010 IF SRFLAG=82 THEN 2000
5020 IF SRFLAG=83 THEN 3000
5030 IF SRFLAG=85 THEN 4500
5040 ? :? "xxx MUST SELECT FIRST! xxx"
5050 IF PEEK(CON) > 7 THEN 5040
5060 GOTO TERM
6000 ? :? " BAUD, CAPTURE, DUMP, MENU OR 1-4,":? "
DUPLEX, RECEIVE, SEND,":? " TRANSLATION, UPLOAD ?":
6010 CLOSE #MODEM:GET #KEY,C:C$=CHR$(C):? C$
6012 IF C$="B" THEN 9900
6015 IF C$="C" THEN 7000
6020 IF C$="D" THEN 1700
6025 IF C$="U" THEN 8000
6030 IF C$="M" THEN 4000
6035 IF C$="R" THEN 7000
6040 IF C$="S" THEN 8000
6045 IF C$="T" THEN TRN=32-TRN:IF SRFLAG>82 THEN
SRFLAG=ZERO
6050 IF C$="P" THEN PLX=1-PLX:POKE 705,PLX
6055 DR=0:IF C>48 AND C<53 THEN DR=NON:GOTO 4020
6060 GOTO MENU
7000 SRFLAG=ZERO:MSAVE=ZERO: ? "xxx RECEIVE FILESPEC ";
7010 INPUT L$:IF L$="" THEN 7090
7015 TRAP 7000:IF L$(2,2) < "<:" THEN IF L$(3,3) < "<:" THEN
? "SPECIFY DEVICE!":GOTO 7000
7020 FILE$=L$:IF L$(1,1) < "<:" THEN 7080
7030 TRAP 7080:OPEN #FILE,4,ZERO,FILE$
7040 ? :? "xxx HAVE FILE ";FILE$
7050 ? "xxx TYPE (Y) TO ERASE ";FILE$;" ";
7060 GET #KEY,A: ? CHR$(A):IF A < 89 THEN L$="":GOTO 7090

```

```

7070 CLOSE #FILE:XIO 36,#FILE,ZERO,ZERO,FILE$:XIO
33,#FILE,ZERO,ZERO,FILE$
7080 SRFLAG=C:ADDR=BUFF
7090 TRAP 4000:GOTO MENU
8000 SRFLAG=ZERO: ? "xxx SEND FILESPEC ";:INPUT L$:IF
L$="" THEN 8090
8005 TRAP 8000:IF L$(2,2) < "<:" THEN IF L$(3,3) < "<:" THEN
? "SPECIFY DEVICE!":GOTO 8000
8010 A=ZERO:IF L$(1,2) < "<:" THEN A=128
8014 SRFLAG=C: ? "xxx LOADING INTO BUFFER xxx":OBJ=0
8015 ADDR=BUFF:TRAP 8080:FILE$=L$:OPEN #FILE,4,A,FILE$
8020 IF TRN THEN 8050
8030 GET #FILE,A:POKE ADDR,A:ADDR=ADDR+1:IF A>ZERO AND
A<255 THEN OBJ=1
8050 POKE 1536,OBJ
8060 C=USR(1537,ADDR):BYTES=C-BUFF:BYTE=((BYTES/128)
-INT(BYTES/128))*128
8065 IF PEEK(195) < 136 THEN ? "xxx ERROR ";PEEK(195):GOTO
8085
8070 FOR A=C TO C+127-BYTE:POKE A,BYTE:
NEXT A:C=A:BYTES=C-BUFF:GOTO 8090
8080 ? CHR$(253):"xxx FILE NOT FOUND xxx"
8085 SRFLAG=ZERO:L$=""
8090 TRAP 4000:GOTO MENU
9000 TRM=32-TRM
9010 GOSUB IO:GOTO MENU
9900 BAUD=BAUD+1:IF BAUD>10 THEN BAUD=8
9910 IF BAUD<10 THEN ? 300*(BAUD-7);
9920 IF BAUD=10 THEN ? 1200;
9930 ? " BAUD":GOTO MENU
10000 C=FRE(0)-400:DIM BUFF$(C),IO$(170):
BUFF=ADR(BUFF$):ADDR=BUFF
10005 ZERO=0:NON=1:SOH=1:EOT=4:ACK=6
10010 BEL=7:BS=8:LF=10:VT=11:CR=13
10020 NAK=21:CAN=24:EOP=26:EOL=ZERO
10030 KEY=1:FILE=2:PTR=3:MODEM=4
10040 DIM C$(1),FILE$(15),L$(130)
10050 MENU=1000:TERM=1050:PLX=0
10060 ERRTRY=10:CON=53279:IO=14000
10070 OPEN #KEY,4,ZERO,"K:"
10080 BAUD=8:GRAPHICS ZERO: ?
10120 XIO 34,#MODEM,192,ZERO,"R1:"
10130 XIO 36,#MODEM,BAUD,ZERO,"R1:"
10180 BUFF$(1)=" ";BUFF$(C)=" "
10190 BUFF$(2,LEN(BUFF$))=BUFF$
11000 ? " ATARI MODEM VER. 4.2"
11010 ? " COPYRIGHT(C) 1982 JIM STEINBRECHER"
11020 ? " 37220 TRICIA DRIVE"
11030 ? " STERLING HTS MI. 48077"
11040 ? :? " BUFFER= ";C;" BYTES, ";INT(C/128);"
SECTORS": ?
11050 ? " WITH WARD CHRISTENSEN'S XMODEM"
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11080 ? :? " ATARI TO ATARI FILE TRANSFER"
11090 ? " AND SELECTED ATARI SYSTEMS"
12000 FOR C=1536 TO 1736:READ A:POKE C,A:NEXT C
12010 FOR C=1 TO 152:READ A:IO$(C)=CHR$(A):NEXT C

```

```

12020 POKE 704,MSAVE:POKE 705,PLX
12030 GOTO MENU
13000 TRAP 13000:TRAN=TRN
14000 CLOSE #MODEM:CLOSE #PTR:CLOSE #FILE
14005 XIO 36,#MODEM,BAUD,ZERO,"R1:"
14010 XIO 38,#MODEM,TRAN,ZERO,"R1:"
14020 OPEN #MODEM,13,ZERO,"R1:"
14030 XIO 40,#MODEM,ZERO,ZERO,"R1:"
14040 POKE 712,TRN*4.1:POKE 707,0:POKE 766,ZERO
14050 TRAP 40000:RETURN
15000 DATA 1,104,104,133,213,104,133,212,162,32,169,
7,157,66,3,169,0,157,72,3
15010 DATA 157,73,3,32,86,228,48,40,160,0,145,212,
173,0,6,201,1,208
15020 DATA 20,177,212,201,155,208,14,169,13,145,212,
230,212,208,2,230,213,169,10,145
15030 DATA 212,230,212,208,2,230,213,24,144,196,132,
195,96,74,68,83
15040 DATA 104,104,133,204,104,133,203,104,133,206,
104,133,205,162,32,169,11,157,66,3
15050 DATA 169,0,157,72,3,157,73,3,160,0,173,0,6,201,
1,208,26,177,203,201
15060 DATA 13,208,20,160,1,177,203,201,10,208,12,160,
0,230,203,208,2,230,204,169
15070 DATA 155,145,203,160,0,177,203,32,86,228,230,203,
208,2,230,204,165,203,197,205
15080 DATA 208,187,165,204,197,206,208,181,96
15090 DATA 169,13,157,66,3,76,86,228,169,7,32,189,6,
76,86,228
15100 DATA 168,169,11,32,189,6,152,76,86,228,157,66,
3,169,0,157,72,3,157,73,3,96
16000 DATA 104,104,133,213,104,133,212,104,133,215,
104,133,214
16010 DATA 162,64,32,163,6,173,235,2,201,0,240,68,162,
64,32,171,6
16020 DATA 172,200,2,192,0,208,16,201,7,208,2,169,253,
201,8,208,2,169,126
16030 DATA 201,32,144,20,172,192,2,240,10,162,0,129,
212,230,212,208,2,230,213,162,0,32,179,6
16040 DATA 165,215,197,213,208,190,165,214,197,212,
208,184,169,8,141,194,2,96
16060 DATA 240,176,173,252,2,201,255,240,41,162,16,
32,171,6,172,193,2,192
16070 DATA 0,240,5,162,0,32,179,6,172,200,2,192,0,208,
12,201,253,208,2
16080 DATA 169,7,201,126,208,2,169,8,162,64,32,179,
6,173,31,208,201,7
16090 DATA 16,199,141,194,2,96

```

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## SIG/Assembler Report

by Phil Heavin Secretary, SIGASM

### December Meeting

Our December meeting was a little unusual in that we had no planned formal session for this meeting. For this reason our entire meeting was informal discussions.

One topic of discussion was - How can SIGASM best serve the needs of its members and MACE? Several of our first meetings were beginners sessions which were well received. Repeating these sessions would be boring for the presenters and regular attendees. A continuing series of classes that build on each other would be very useful but, most members find it difficult to attend each meeting and missing even one would break the continuity. Finally, we could continue attempting to give a mix of both beginners and advanced topics in the same meeting.

Another topic of discussion was possible projects for SIGASM. I am sure there will be further discussion on both topics in future meetings and your input would be appreciated.

### February's Meeting

February's meeting will be Thursday, the 3rd at the home of David Brown in Detroit. You can contact Dave at 393-8787 or me at 939-6213. The meeting will begin at 7:00 with socializing and free form discussion with the actual business portion starting at 7:30. We hope to see you there.



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Steve Tobias

## BASIC Subroutines for Filenames

by Phil Heavin

The device independence that is an integral part of the ATARI operating system is a very powerful and useful feature that BASIC programmers do not usually utilize to its fullest extent.

A user of a program that writes an ASCII type output file should have the flexibility when he runs the program to direct its output to any device on his computer. This can be achieved very easily on the ATARI by simply prompting the user for a complete file string and using that string in the open statement.

The above approach has two drawbacks. The first is that all users must understand the file naming conventions to give even the simplest response. Second, it would be nice if the majority of the time the user could get what he wants by typing just a RETURN.

The following example program demonstrates the use of the subroutine GETFILE. Given the default file string, DEF\$, it will prompt the user for his input, apply the default for each separate portion of the file specification and return the string FILE\$ which can be used in the OPEN statement.

```

100 REM
110 REM | PROGRAM TO DEMONSTRATE |
120 REM | PROMPTING FOR A FILE NAME |
130 REM | WITH DEFAULTS |
140 REM
200 DIM DEF$(16),FILE$(16),DEV$(3),
    DFDEV$(3),NAME$(8),DFNAME$(8),EXT$(4),
    DFEXT$(4),REST$(12)
210 LET GETFILE=20000
220 FSS=20500
250 REM
260 REM | BODY OF PROGRAM GOES HERE |
270 REM
300 DEF$="D:\OUTFILE.DAT"
310 GOSUB GETFILE
320 PRINT "OPEN FILE ";FILE$
330 PRINT
340 GOTO 310
20000 REM
20002 REM |GETFILE ROUTINE |
20004 REM | PROMPT USER FOR FILENAME|
20010 REM | WITH DEFAULT AND APPLY |
20020 REM | THEM TO THE RESPONSE |
20021 REM |
20022 REM |INPUT: |
20023 REM | DEF$ - DEFAULT FILE |
20024 REM | STRING |
20025 REM |
20026 REM |OUTPUT: |
20027 REM | FILE$ - RESULT FILE |
20028 REM | DEV$ - RESULT DEVICE |
20029 REM | NAME$ - RESULT NAME |
20030 REM | EXT$ - RESULT EXTENTION|
20031 REM

```

```

20035 FILE$=DEF$
20040 GOSUB FSS
20050 DFDEV$=DEV$:DFNAME$=NAME$:
    DFEXT$=EXT$
20060 PRINT "(";DEF$;")";
20070 INPUT FILE$
20080 GOSUB FSS
20090 IF DEV$="" THEN DEV$=DFDEV$
20100 IF NAME$="" THEN NAME$=DFNAME$
20110 IF EXT$="" THEN EXT$=DFEXT$
20120 FILE$=DEV$
20130 FILE$(LEN(FILE$)+1)=NAME$
20140 FILE$(LEN(FILE$)+1)=EXT$
20150 RETURN
20500 REM
20510 REM | FSS - FILE STRING SCAN |
20511 REM |
20512 REM |INPUT: |
20513 REM | FILE$ - FILE STRING |
20514 REM |
20515 REM |OUTPUT: |
20516 REM | DEV$ - DEVICE |
20517 REM | NAME$ - FILE NAME |
20518 REM | EXT$ - FILE EXTENTION |
20520 REM
20530 DEV$=""
20540 NAME$=""
20550 EXT$=""
20555 REST$=FILE$
20560 IC=1:LC=LEN(FILE$)
20570 IF IC<=LC THEN IF FILE$(IC,IC)
    <>" " THEN IC=IC+1:GOTO 20570
20580 IF IC<=LC THEN DEV$=FILE$(1,IC):
    REST$="":IF IC<LC THEN REST$=FILE$(IC+1)
20585 FILE$=REST$
20590 IC=1:LC=LEN(FILE$)
20600 IF IC<=LC THEN IF FILE$(IC,IC)
    <>" " THEN IC=IC+1:GOTO 20600
20610 IF IC>1 THEN NAME$=FILE$(1,IC-1)
20620 IF IC<=LC THEN EXT$=FILE$(IC)
20630 RETURN

```

Run this program and try several responses to the prompt. As you will see, typing RETURN would cause the output to be written to "D:\OUTFILE.DAT".

If, however, this were just a test run and you respond E: the resultant file string is E:\OUTFILE.DAT which means the output would be displayed on the screen.

For printed output you would respond with P:. If you wanted the output to a different file name on disk you would just type the name, for example, MYFILE. The output file will be D:\MYFILE.DAT.

If the filename is ok but you are lucky enough to have another disk you can direct the output there by typing D2: causing the file string to be D2:\OUTFILE.DAT.

The examples could be continued but rather, try different responses to the sample program. Then use the subroutines in your programs. It will make them more usable for you and those who use your program.



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